

Engineering Interpretations
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### **Water Features**

This table gives estimates of several important water features, which are used in land use planning that involves engineering considerations. Water features which are covered include hydrologic soil groups, flooding frequency and duration, and seasonal high water table.

### **Hydrologic Soil Groups**

The Hydrologic Soil Group, designated A, B, C or D, is a group of soils that, when saturated, have the same runoff potential under similar storm and cover conditions. Soil properties that influence runoff potential are those that influence the minimum rate of infiltration for a bare soil after prolonged wetting and when not frozen. These properties are depth to seasonally high water table, intake rate, permeability after prolonged wetting, and depth to very slowly permeable layer. The influences of ground cover and slope are treated independently --- not in hydrologic soil groups.

In the definitions of the classes, infiltration rate is the rate at which water enters the soil at the surface and is controlled by surface conditions.

Transmission rate is the rate at which water moves in the soil and is controlled by properties of the soil layers.

#### **Hydrologic Soil Group A**

Soils having high infiltration rates even when thoroughly wetted and consisting chiefly of deep, well-drained to excessively drained sands or gravels. These soils have a high rate of water transmission. (Low runoff potential)

#### **Hydrologic Soil Group B**

Soils having moderate infiltration rates when thoroughly wetted, consisting chiefly of moderately deep or deep, moderately well or well drained soils with moderately fine to moderately coarse textures. These soils have a moderate rate of water transmission.

#### **Hydrologic Soil Group C**

Soils having slow infiltration rates when thoroughly wetted, consisting chiefly of (1) soils with a layer that impedes the downward movement of water, or (2) soils with moderately fine or fine textures and slow infiltration rate. These soils have a slow rate of water transmission.

#### **Hydrologic Soil Group D**

Soils having very slow infiltration rates when thoroughly wetted, consisting chiefly of (1) clayey soils with high swelling capacity or potential, (2) soils with a high permanent water table, (3) soils with a claypan or clay layer at or near the surface, and (4) shallow soils over nearly impervious materials. These soils have a very slow rate of water transmission. (High runoff potential)

### **Dual Hydrologic Groups**

Dual hydrologic groups, A/D, B/D and C/D, are given for criteria with soils that can be adequately drained. The first letter applies to the drained condition and the second to the undrained condition. Only soils that are rated D in their natural condition are assigned to dual groups.

### **Flooding**

The temporary covering of the soil surface by flowing water, is caused by overflowing streams, by runoff from adjacent slopes, or by inflow from high tides. Shallow water standing or flowing for short periods after rainfall or snowmelt is not considered flooding. Standing water in marshes and swamps or in a closed depression is considered ponding. Frequency, duration, and probable dates of occurrence are estimated.

Frequency generally is expressed as none, occasional, or frequent. None means that flooding is not probable. Occasional means that flooding occurs infrequently under normal weather conditions (there is a 5 to 50 percent chance of flooding in any year). Frequent means that flooding occurs often under normal weather conditions (there is a 50 percent chance of flooding in any year). Common groups frequent and occasional flooding into one class.

Duration is expressed as very brief (less than 2 days), brief (2 to 7 days), long (7 to 30 days), and very long (more than 30 days).

Probable dates of occurrence that floods are most likely to occur are expressed in months. About two-thirds to three-fourths of all flooding occurs during the stated period.

### **High Water Table (Seasonal)**

This is a zone of saturation at the highest average depth during the wettest season. It is at least 6 inches thick, persists in the soil for more than a few weeks, and is within 6 feet of the soil surface. The depth to a seasonal high water table applies to undrained soils. Soils that have a seasonal high water table are classified according to depth to the water table, kind of water table, and time of year when the water table is highest. Three kinds of seasonal high water table are recognized within the soil: apparent, perched, and artesian. Another kind is above the soil surface much of the time causing ponding.

Apparent water table is the level at which water stands in a freshly dug, unlined borehole after adequate time for adjustments in the surrounding soil.

Perched water table is one that exists in the soil above an unsaturated zone. A water table may be inferred to be perched on the basis of general knowledge of the area. To prove that a water table is perched, the water levels in boreholes must be observed to fall when the borehole is extended

Artesian water table is one that exists under hydrostatic head beneath an impermeable layer; when the impermeable layer has been penetrated by a cased borehole, the water rises.

Ponding is standing water in a closed depression. The water is removed only by percolation, transpiration, or evaporation.

This subsection includes:

- **Water Features**

Adair County, Missouri  
Water Features

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Map symbol and soil name	Hydro- logic group	Month	Water table		Ponding			Flooding	
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
			Ft	Ft	Ft				
14C2: Armstrong-----	C	January	1.0-3.0	5.9-5.9	---	---	None	---	None
		February	1.0-3.0	5.9-5.9	---	---	None	---	None
		March	1.0-3.0	5.9-5.9	---	---	None	---	None
		April	1.0-3.0	5.9-5.9	---	---	None	---	None
		May	1.0-3.0	5.9-5.9	---	---	None	---	None
		June	1.0-3.0	5.9-5.9	---	---	None	---	None
		July	1.0-3.0	5.9-5.9	---	---	None	---	None
		November	1.0-3.0	5.9-5.9	---	---	None	---	None
		December	1.0-3.0	5.9-5.9	---	---	None	---	None
14D2: Armstrong-----	C	January	1.0-3.0	5.9-5.9	---	---	None	---	None
		February	1.0-3.0	5.9-5.9	---	---	None	---	None
		March	1.0-3.0	5.9-5.9	---	---	None	---	None
		April	1.0-3.0	5.9-5.9	---	---	None	---	None
		May	1.0-3.0	5.9-5.9	---	---	None	---	None
		June	1.0-3.0	5.9-5.9	---	---	None	---	None
		July	1.0-3.0	5.9-5.9	---	---	None	---	None
		November	1.0-3.0	5.9-5.9	---	---	None	---	None
		December	1.0-3.0	5.9-5.9	---	---	None	---	None

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Water Features

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Map symbol and soil name	Hydro- logic group	Month	Water table		Ponding			Flooding	
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
			Ft	Ft	Ft				
16C: Bevier-----	C	January	0.5-1.5	5.9-5.9	---	---	None	---	None
		February	0.5-1.5	5.9-5.9	---	---	None	---	None
		March	0.5-1.5	5.9-5.9	---	---	None	---	None
		April	0.5-1.5	5.9-5.9	---	---	None	---	None
		November	0.5-1.5	5.9-5.9	---	---	None	---	None
		December	0.5-1.5	5.9-5.9	---	---	None	---	None
17E2: Purdin-----	C	January	2.0-3.5	5.9-5.9	---	---	None	---	None
		February	2.0-3.5	5.9-5.9	---	---	None	---	None
		March	2.0-3.5	5.9-5.9	---	---	None	---	None
		April	2.0-3.5	5.9-5.9	---	---	None	---	None
		November	2.0-3.5	5.9-5.9	---	---	None	---	None
		December	2.0-3.5	5.9-5.9	---	---	None	---	None
17F2: Purdin-----	C	January	2.0-3.5	5.9-5.9	---	---	None	---	None
		February	2.0-3.5	5.9-5.9	---	---	None	---	None
		March	2.0-3.5	5.9-5.9	---	---	None	---	None
		April	2.0-3.5	5.9-5.9	---	---	None	---	None
		November	2.0-3.5	5.9-5.9	---	---	None	---	None
		December	2.0-3.5	5.9-5.9	---	---	None	---	None

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Map symbol and soil name	Hydro- logic group	Month	Water table		Ponding			Flooding	
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
			Ft	Ft	Ft				
19E: Vanmeter-----	C	Jan-Dec	---	---	---	---	None	---	None
19F: Vanmeter-----	C	Jan-Dec	---	---	---	---	None	---	None
22B: Adco-----	D	January	1.0-2.5	5.9-5.9	---	---	None	---	None
		February	1.0-2.5	5.9-5.9	---	---	None	---	None
		March	1.0-2.5	5.9-5.9	---	---	None	---	None
		April	1.0-2.5	5.9-5.9	---	---	None	---	None
		May	1.0-2.5	5.9-5.9	---	---	None	---	None
		November	1.0-2.5	5.9-5.9	---	---	None	---	None
		December	1.0-2.5	5.9-5.9	---	---	None	---	None
23D2: Gorin-----	C	January	1.5-2.5	5.9-5.9	---	---	None	---	None
		February	1.5-2.5	5.9-5.9	---	---	None	---	None
		March	1.5-2.5	5.9-5.9	---	---	None	---	None
		April	1.5-2.5	5.9-5.9	---	---	None	---	None
		November	1.5-2.5	5.9-5.9	---	---	None	---	None
		December	1.5-2.5	5.9-5.9	---	---	None	---	None

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Map symbol and soil name	Hydro- logic group	Month	Water table		Ponding			Flooding	
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
			Ft	Ft	Ft				
Winnegan-----	C	January	2.0-3.5	5.9-5.9	---	---	None	---	None
		February	2.0-3.5	5.9-5.9	---	---	None	---	None
		March	2.0-3.5	5.9-5.9	---	---	None	---	None
		April	2.0-3.5	5.9-5.9	---	---	None	---	None
		November	2.0-3.5	5.9-5.9	---	---	None	---	None
		December	2.0-3.5	5.9-5.9	---	---	None	---	None
24D2: Gara-----	C	Jan-Dec	---	---	---	---	None	---	None
24E2: Gara-----	C	Jan-Dec	---	---	---	---	None	---	None
24F2: Gara-----	C	Jan-Dec	---	---	---	---	None	---	None
26B2: Leonard-----	D	January	0.5-2.0	5.9-5.9	---	---	None	---	None
		February	0.5-2.0	5.9-5.9	---	---	None	---	None
		March	0.5-2.0	5.9-5.9	---	---	None	---	None
		April	0.5-2.0	5.9-5.9	---	---	None	---	None
		November	0.5-2.0	5.9-5.9	---	---	None	---	None
		December	0.5-2.0	5.9-5.9	---	---	None	---	None

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Map symbol and soil name	Hydro- logic group	Month	Water table		Ponding			Flooding	
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
			Ft	Ft	Ft				
28E2: Winnegan-----	C	January	2.0-3.5	5.9-5.9	---	---	None	---	None
		February	2.0-3.5	5.9-5.9	---	---	None	---	None
		March	2.0-3.5	5.9-5.9	---	---	None	---	None
		April	2.0-3.5	5.9-5.9	---	---	None	---	None
		November	2.0-3.5	5.9-5.9	---	---	None	---	None
		December	2.0-3.5	5.9-5.9	---	---	None	---	None
28F: Winnegan-----	C	January	2.0-3.5	5.9-5.9	---	---	None	---	None
		February	2.0-3.5	5.9-5.9	---	---	None	---	None
		March	2.0-3.5	5.9-5.9	---	---	None	---	None
		April	2.0-3.5	5.9-5.9	---	---	None	---	None
		November	2.0-3.5	5.9-5.9	---	---	None	---	None
		December	2.0-3.5	5.9-5.9	---	---	None	---	None
31: Putnam-----	D	January	0.5-1.5	5.9-5.9	---	---	None	---	None
		February	0.5-1.5	5.9-5.9	---	---	None	---	None
		March	0.5-1.5	5.9-5.9	---	---	None	---	None
		April	0.5-1.5	5.9-5.9	---	---	None	---	None
		May	0.5-1.5	5.9-5.9	---	---	None	---	None
		November	0.5-1.5	5.9-5.9	---	---	None	---	None
		December	0.5-1.5	5.9-5.9	---	---	None	---	None



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Map symbol and soil name	Hydro- logic group	Month	Water table		Ponding			Flooding	
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
			Ft	Ft	Ft				
40: Arbela-----	C	January	0.0-1.5	>6.0	---	---	None	Brief	Occasional
		February	0.0-1.5	>6.0	---	---	None	Brief	Occasional
		March	0.0-1.5	>6.0	---	---	None	Brief	Occasional
		April	0.0-1.5	>6.0	---	---	None	Brief	Occasional
		May	0.0-1.5	>6.0	---	---	None	---	None
		November	0.0-1.5	>6.0	---	---	None	Brief	Occasional
		December	0.0-1.5	>6.0	---	---	None	Brief	Occasional
43: Chariton-----	C	January	0.0-1.5	5.9-5.9	---	---	None	---	None
		February	0.0-1.5	5.9-5.9	---	---	None	---	None
		March	0.0-1.5	5.9-5.9	---	---	None	---	None
		April	0.0-1.5	5.9-5.9	---	---	None	---	None
		May	0.0-1.5	5.9-5.9	---	---	None	---	None
		November	0.0-1.5	5.9-5.9	---	---	None	---	None
		December	0.0-1.5	5.9-5.9	---	---	None	---	None
44B: Gifford-----	D	January	0.5-1.5	5.9-5.9	---	---	None	---	None
		February	0.5-1.5	5.9-5.9	---	---	None	---	None
		March	0.5-1.5	5.9-5.9	---	---	None	---	None
		April	0.5-1.5	5.9-5.9	---	---	None	---	None
		November	0.5-1.5	5.9-5.9	---	---	None	---	None
		December	0.5-1.5	5.9-5.9	---	---	None	---	None

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Map symbol and soil name	Hydro- logic group	Month	Water table		Ponding			Flooding	
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
			Ft	Ft	Ft				
44C2: Gifford-----	D	January	0.5-1.5	5.9-5.9	---	---	None	---	None
		February	0.5-1.5	5.9-5.9	---	---	None	---	None
		March	0.5-1.5	5.9-5.9	---	---	None	---	None
		April	0.5-1.5	5.9-5.9	---	---	None	---	None
		November	0.5-1.5	5.9-5.9	---	---	None	---	None
		December	0.5-1.5	5.9-5.9	---	---	None	---	None
46: Vesser-----	C	January	0.0-1.0	>6.0	---	---	None	Brief	Occasional
		February	0.0-1.0	>6.0	---	---	None	Brief	Occasional
		March	0.0-1.0	>6.0	---	---	None	Brief	Occasional
		April	0.0-1.0	>6.0	---	---	None	Brief	Occasional
		May	0.0-1.0	>6.0	---	---	None	---	None
		June	0.0-1.0	>6.0	---	---	None	---	None
		July	0.0-1.0	>6.0	---	---	None	---	None
		November	0.0-1.0	>6.0	---	---	None	Brief	Occasional
		December	0.0-1.0	>6.0	---	---	None	Brief	Occasional

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Map symbol and soil name	Hydro- logic group	Month	Water table		Ponding			Flooding	
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
			Ft	Ft	Ft				
47: Zook-----	C	January	0.0-1.0	>6.0	---	---	None	Brief	Occasional
		February	0.0-1.0	>6.0	---	---	None	Brief	Occasional
		March	0.0-1.0	>6.0	---	---	None	Brief	Occasional
		April	0.0-1.0	>6.0	---	---	None	Brief	Occasional
		May	0.0-1.0	>6.0	---	---	None	Brief	Occasional
		June	0.0-1.0	>6.0	---	---	None	Brief	Occasional
		July	0.0-1.0	>6.0	---	---	None	---	None
		November	0.0-1.0	>6.0	---	---	None	Brief	Occasional
		December	0.0-1.0	>6.0	---	---	None	Brief	Occasional
49: Dockery-----	C	January	1.5-2.5	>6.0	---	---	None	Long	Occasional
		February	1.5-2.5	>6.0	---	---	None	Long	Occasional
		March	1.5-2.5	>6.0	---	---	None	Long	Occasional
		April	1.5-2.5	>6.0	---	---	None	Long	Occasional
		May	1.5-2.5	>6.0	---	---	None	Long	Occasional
		June	1.5-2.5	>6.0	---	---	None	Long	Occasional
		November	1.5-2.5	>6.0	---	---	None	Long	Occasional
		December	1.5-2.5	>6.0	---	---	None	Long	Occasional

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Map symbol and soil name	Hydro- logic group	Month	Water table		Ponding			Flooding	
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
			Ft	Ft	Ft				
49: (cont) Tice-----	B	January	1.0-2.0	>6.0	---	---	None	Long	Occasional
		February	1.0-2.0	>6.0	---	---	None	Long	Occasional
		March	1.0-2.0	>6.0	---	---	None	Long	Occasional
		April	1.0-2.0	>6.0	---	---	None	Long	Occasional
		May	1.0-2.0	>6.0	---	---	None	Long	Occasional
		June	---	---	---	---	None	Long	Occasional
54B: Vigar-----	C	January	2.0-3.0	>6.0	---	---	None	---	None
		February	2.0-3.0	>6.0	---	---	None	---	None
		March	2.0-3.0	>6.0	---	---	None	---	None
		April	2.0-3.0	>6.0	---	---	None	---	None
		November	2.0-3.0	>6.0	---	---	None	---	None
		December	2.0-3.0	>6.0	---	---	None	---	None
55B: Vigar-----	C	January	2.0-3.0	>6.0	---	---	None	---	None
		February	2.0-3.0	>6.0	---	---	None	---	None
		March	2.0-3.0	>6.0	---	---	None	---	None
		April	2.0-3.0	>6.0	---	---	None	---	None
		November	2.0-3.0	>6.0	---	---	None	---	None
		December	2.0-3.0	>6.0	---	---	None	---	None

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Map symbol and soil name	Hydro- logic group	Month	Water table		Ponding			Flooding	
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
			Ft	Ft	Ft				
55B: (cont)									
Zook-----	C	January	0.0-1.0	>6.0	---	---	None	Brief	Occasional
		February	0.0-1.0	>6.0	---	---	None	Brief	Occasional
		March	0.0-1.0	>6.0	---	---	None	Brief	Occasional
		April	0.0-1.0	>6.0	---	---	None	Brief	Occasional
		May	0.0-1.0	>6.0	---	---	None	Brief	Occasional
		June	0.0-1.0	>6.0	---	---	None	Brief	Occasional
		July	0.0-1.0	>6.0	---	---	None	---	None
		November	0.0-1.0	>6.0	---	---	None	Brief	Occasional
		December	0.0-1.0	>6.0	---	---	None	Brief	Occasional
Excello-----	B/D	January	0.0-1.5	>6.0	---	---	None	Brief	Occasional
		February	0.0-1.5	>6.0	---	---	None	Brief	Occasional
		March	0.0-1.5	>6.0	---	---	None	Brief	Occasional
		April	0.0-1.5	>6.0	---	---	None	Brief	Occasional
		May	0.0-1.5	>6.0	---	---	None	Brief	Occasional
		November	0.0-1.5	>6.0	---	---	None	Brief	Occasional
		December	0.0-1.5	>6.0	---	---	None	Brief	Occasional
56:									
Wabash-----	D	January	0.0-1.0	>6.0	---	---	None	Long	Occasional
		February	0.0-1.0	>6.0	---	---	None	Long	Occasional
		March	0.0-1.0	>6.0	---	---	None	Long	Occasional
		April	0.0-1.0	>6.0	---	---	None	Long	Occasional
		May	---	---	---	---	None	Long	Occasional
		November	0.0-1.0	>6.0	---	---	None	Long	Occasional
		December	0.0-1.0	>6.0	---	---	None	Long	Occasional

Adair County, Missouri  
Water Features

(Depths of layers are in feet. See text for definitions of terms used in this table. Estimates of the frequency of ponding and flooding apply to the whole year rather than to individual months. Absence of an entry indicates that the feature is not a concern or that data were not estimated.)

Map symbol and soil name	Hydro- logic group	Month	Water table		Ponding			Flooding	
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
			Ft	Ft	Ft				
57: Floriss-----	B	January	3.0-5.0	>6.0	---	---	None	Brief	Frequent
		February	3.0-5.0	>6.0	---	---	None	Brief	Frequent
		March	3.0-5.0	>6.0	---	---	None	Brief	Frequent
		April	3.0-5.0	>6.0	---	---	None	Brief	Frequent
		May	3.0-5.0	>6.0	---	---	None	Brief	Frequent
		June	3.0-5.0	>6.0	---	---	None	---	None
		November	3.0-5.0	>6.0	---	---	None	Brief	Frequent
		December	3.0-5.0	>6.0	---	---	None	Brief	Frequent
69: Floriss-----	B	January	3.0-5.0	>6.0	---	---	None	Brief	Frequent
		February	3.0-5.0	>6.0	---	---	None	Brief	Frequent
		March	3.0-5.0	>6.0	---	---	None	Brief	Frequent
		April	3.0-5.0	>6.0	---	---	None	Brief	Frequent
		May	3.0-5.0	>6.0	---	---	None	Brief	Frequent
		June	3.0-5.0	>6.0	---	---	None	---	None
		November	3.0-5.0	>6.0	---	---	None	Brief	Frequent
		December	3.0-5.0	>6.0	---	---	None	Brief	Frequent
71C: Plainfield-----	A	Jan-Dec	---	---	---	---	None	---	None
71F: Plainfield-----		Jan-Dec	---	---	---	---	None	---	None

Adair County, Missouri  
Water Features

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Map symbol and soil name	Hydro- logic group	Month	Water table		Ponding			Flooding	
			Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
			Ft	Ft	Ft				
AED: Orthent-----	---	Jan-Dec	---	---	---	---	None	---	None
M-W: Water-----	---	Jan-Dec	---	---	---	---	None	---	None
W: Water-----	---	Jan-Dec	---	---	---	---	None	---	None